

Name: _____

This review sheet is not comprehensive. Be sure to study your notes, homework assignments, and old tests as well!

1) What is the sum of the roots of the equation $3x^2 = 9x + 1$?

- A) 9 B) $\frac{1}{3}$ C) -3 D) 3

2) What are the sum (S) and product (P) of the roots of the equation $3x^2 - 7x + 12 = 0$?

- A) $S = 7, P = 12$ B) $S = -\frac{7}{3}, P = -4$ C) $S = \frac{7}{3}, P = 4$ D) $S = \frac{7}{3}, P = -4$

3) Find the sum of the roots and the product of the roots of the given quadratic equation.

$$3z^2 + 2 = 7z$$

4) If one root of the equation $x^2 + 3x + k = 0$ is 4, find the other root.

5) If one root of the equation $x^2 + bx + 12 = 0$ is -4, find the other root.

6) The roots of the equation $-3x^2 = 5x + 4$ are

- A) real, irrational, and unequal C) real, rational, and equal
B) real, rational, and unequal D) imaginary

7) If the discriminant of an equation is 10, then the roots are

- A) imaginary C) real, irrational, and unequal
B) real, rational, and equal D) real, rational, and unequal

8) The roots of the equation $ax^2 + 4x + 2 = 0$ are real and equal when a is equal to

- A) 1 B) 2 C) 3 D) 4

9) Find the discriminant: $2y^2 + 3y + 2 = 0$

10) If the roots of $ax^2 + bx + c = 0$ are real, rational, and equal, what is true about the graph of the function $y = ax^2 + bx + c$?

- A) It is tangent to the x-axis. C) It intersects the x-axis in two distinct points.
B) It lies entirely below the x-axis. D) It lies entirely above the x-axis.

11) Which equation has the complex number $4 - 3i$ as a root?

- A) $x^2 - 8x + 25 = 0$ B) $x^2 + 8x - 25 = 0$ C) $x^2 - 6x + 25 = 0$ D) $x^2 + 6x - 25 = 0$

12) Write an equation in the form $ax^2 + bx + c = 0$ if the sum of the roots is $-\frac{1}{2}$ and the product of the roots is $\frac{1}{4}$.

13) If the roots of a quadratic equation are $\frac{-2 + \sqrt{5}}{2}$ and $\frac{-2 - \sqrt{5}}{2}$, write the equation in $ax^2 + bx + c = 0$ form.

14) (a) Write a quadratic equation such that the sum of its roots is -5 and the product of its roots is 6.

(b) What are the roots of the equation you wrote in part (a)? [Show all work.]

15) Express in simplest form in terms of i : $\sqrt{-12}$

16) Express the given expression in terms of i . [Assume all variables have a positive value.]

$$\sqrt{-2a^2b^5}$$

17) The sum of $3\sqrt{-8}$ and $4\sqrt{-50}$ is

A) $12\sqrt{-58}$

B) $26i\sqrt{2}$

C) $7i\sqrt{58}$

D) $7i\sqrt{2}$

18) The expression i^{25} is equivalent to

A) $-i$

B) -1

C) i

D) 1

19) When simplified, $i^{27} + i^{34}$ is equal to

A) $i - 1$

B) $-i - 1$

C) i^{61}

D) i

20) What is the sum of $5 - 3i$ and the conjugate of $3 + 2i$?

A) $2 - 5i$

B) $2 + 5i$

C) $8 + 5i$

D) $8 - 5i$

21) Evaluate and simplify in $a + bi$ form: $(-4 + i) - (6 - i)$

22) What is the product of $(3 - 2i)$ and $(7 + 6i)$?

A) $21 - 12i$

B) $21 + 16i$

C) $9 + 4i$

D) $33 + 4i$

23) Simplify in $a + bi$ form: $(2 + i)(3 - 6i)$

24) What is the magnitude of the complex number $z = 4 - 3i$?

A) 5

B) $\sqrt{7}$

C) 1

D) 25

25) Plot $-4 + 3i$ on the complex plane.